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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/570,770	03/07/2006	Takeaki Itsuji	03500.521604.	5252

5514 7590 06/24/2009
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EXAMINER	
SYED, ATIA K	
ART UNIT	**PAPER NUMBER**
3769	
MAIL DATE	**DELIVERY MODE**
06/24/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/570,770	ITSUJI ET AL.	
	Examiner	Art Unit	
	ATIA SYED	3769	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 31 March 2009.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,3 and 5-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,3, 5-15 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

The examiner acknowledges the response filed on March 31, 2009.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, and 5-15 are rejected under 35 U.S.C 103(a) as being unpatentable over Brooks (US 6,336,045 B1) in view of Takahashi (US 6,747,736).

1. A method of identification of a living body, comprising the steps of:

detecting an electromagnetic wave generated from the living body, wherein the electromagnetic wave includes superposed biological information (figs 11-14, the receiving mechanism 105 and detecting mechanism detect the electromagnetic wave form comprising biological information; column 13, lines 19-51);

deriving a time waveform of the electromagnetic wave by sampling the electromagnetic wave detected in the detecting step (figs 11-14, the detector measures the phase change i.e. time delay, amplitude and/or frequency i.e. time wave form of the electromagnetic waves; column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5);

extracting the biological information by filtering the time waveform through a frequency property (the detector extracts the biological information using a frequency property; column 14, lines 19-34); and

comparing the biological information with preliminarily memorized biological information (microprocessor compares the derived time wave form of the electromagnetic waves detected by the detection mechanism with the stored reference information ; column 14, lines 8-18).

Brooks discloses the use of electromagnetic waves (column 4, lines 3-5) for detecting biological information and the biological information extracted from the time waveform is derived form either phase shift, amplitude change and/or frequency change (column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5). Brooks further suggests the use of different frequencies of electromagnetic waves for optimized results depending upon the type of field being used (column 4, lines 21-22; column 9, lines 24-27). Brooks recognizes biometric properties of a subject by detecting electromagnetic waves and processing them to image biometric parameters e.g. finger prints. However, Brooks does not teach that the frequency of electromagnetic waves ranges from 300 GHz to 30 THz i.e. terahertz waves are used and that the biological information is extracted from the time delay caused by change in position of a body over time.

Takahashi, a reference in an analogous art i.e. electromagnetic imaging discloses an imaging system for 2 D analysis of an object wherein the system can detect changes in position of an object in real time by performing a frequency analysis to measure the time delay of the terahertz signals emitted by the object (see: *summary of the invention*). Takahashi further

discloses that terahertz waves of frequency 100 GHz – 10 THz and neighboring higher and lower frequencies are used (column 1, lines 20-31).

It would have been obvious to one of ordinary skill in the art to substitute the electromagnetic waves used for extracting biological information as disclosed by Brooks with a higher frequency electromagnetic waves i.e. terahertz waves as taught by Takahashi because terahertz waves provides the ideal trade-off between spatial resolution and Rayleigh scattering thus resulting in a better image quality than microwaves or other higher frequency electromagnetic wave e.g. optical waves.

Regarding rejections on claims 3 and 5 see previous office action.

6. A method of identification of a living body, comprising the steps of:

generating an electromagnetic wave pulse (the frequency generator 106, electric field and/or magnetic field transmitter 107 generate and transmit electromagnetic waves; column 13, lines 19-51);

detecting an electromagnetic wave generated from the living body, the electromagnetic wave including superposed biological information (figs 11-14, the receiving mechanism 105 and detecting mechanism detect the electromagnetic wave form comprising biological information; column 13, lines 19-51);

deriving a time waveform of the electromagnetic wave by sampling the electromagnetic wave detected in the detecting step (figs 11-14, the detector measures the phase change i.e. time delay, amplitude and/or frequency i.e. time wave form of the electromagnetic waves; column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5);

extracting the biological information by filtering the time waveform through a frequency property (the detector extracts the biological information using a frequency property; column 14, lines 19-34); and

comparing the biological information with preliminarily memorized biological information (microprocessor compares the derived time wave form of the electromagnetic waves detected by the detection mechanism with the stored reference information; column 14, lines 8-18).

Brooks discloses the use of electromagnetic waves (column 4, lines 3-5) for detecting biological information and the biological information extracted from the time waveform is derived form either phase shift, amplitude change and/or frequency change (column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5). Brooks further suggests the use of different frequencies of electromagnetic waves for optimized results depending upon the type of field being used (column 4, lines 21-22; column 9, lines 24-27). Brooks recognizes biometric properties of a subject by detecting electromagnetic waves and processing them to image biometric parameters e.g. finger prints. However, Brooks does not teach that the frequency of electromagnetic waves ranges from 300 GHz to 30 THz i.e. terahertz waves are used and that the biological information is extracted from the time delay caused by change in position of a body over time.

Takahashi, a reference in an analogous art i.e. electromagnetic imaging discloses an imaging system for 2 D analysis of an object wherein the system can detect changes in position of an object in real time by performing a frequency analysis to measure the time delay of the terahertz signals emitted by the object (see: *summary of the invention*). Takahashi further

discloses that terahertz waves of frequency 100 GHz – 10 THz and neighboring higher and lower frequencies are used (column 1, lines 20-31).

It would have been obvious to one of ordinary skill in the art to substitute the electromagnetic waves used for extracting biological information as disclosed by Brooks with a higher frequency electromagnetic waves i.e. terahertz waves as taught by Takahashi because terahertz waves provides the ideal trade-off between spatial resolution and Rayleigh scattering thus resulting in a better image quality than microwaves or other higher frequency electromagnetic wave e.g. optical waves.

7. An apparatus for identifying a living body, comprising:

a detecting section for detecting the electromagnetic wave pulse, wherein the electromagnetic wave pulse includes superposed biological information (figs 11-14, receiving mechanism 105 including electric field receiver and/or magnetic field receiver 108 and the detecting mechanism 111; column 13, lines 19-51);

an information-collecting section for deriving a time waveform of the electromagnetic wave pulse by sampling the electromagnetic wave pulse detected in the detecting section and extracting the biological information by filtering the time waveform through a frequency property (figs 11-14, a detector detects the electromagnetic wave form comprising biological information; column 13, lines 19-51; the detector further measures the phase change i.e. time delay, amplitude and/or frequency i.e. time wave form of the electromagnetic waves; column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5 and the detector extracts the biological information using a frequency property; column 14, lines 19-34);

a memory section for preliminarily memorizing biological information (a microprocessor has associated memory for storing reference biological information; column 13, lines 19-51 and column 14, lines 8-18); and

an identifying section for comparing the biological information derived extracted by the information-collecting section with the biological information memorized by the memory section (a microprocessor 103 compares the biological information extracted by the detector with reference signals stored in the memory; column 13, lines 19-51 and column 14, lines 8-18).

Brooks discloses the use of electromagnetic waves (column 4, lines 3-5) for detecting biological information and the biological information extracted from the time waveform is derived form either phase shift, amplitude change and/or frequency change (column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5). Brooks further suggests the use of different frequencies of electromagnetic waves for optimized results depending upon the type of field being used (column 4, lines 21-22; column 9, lines 24-27). Brooks recognizes biometric properties of a subject by detecting electromagnetic waves and processing them to image biometric parameters e.g. finger prints. However, Brooks does not teach that the frequency of electromagnetic waves ranges from 300 GHz to 30 THz i.e. terahertz waves are used and that the biological information is extracted from the time delay caused by change in position of a body over time.

Takahashi, a reference in an analogous art i.e. electromagnetic imaging discloses an imaging system for 2 D analysis of an object wherein the system can detect changes in position of an object in real time by performing a frequency analysis to measure the time delay of the terahertz signals emitted by the object (see: *summary of the invention*). Takahashi further

discloses that terahertz waves of frequency 100 GHz – 10 THz and neighboring higher and lower frequencies are used (column 1, lines 20-31).

It would have been obvious to one of ordinary skill in the art to substitute the electromagnetic waves used for extracting biological information as disclosed by Brooks with a higher frequency electromagnetic waves i.e. terahertz waves as taught by Takahashi because terahertz waves provides the ideal trade-off between spatial resolution and Rayleigh scattering thus resulting in a better image quality than microwaves or other higher frequency electromagnetic wave e.g. optical waves.

<u>8.</u> An apparatus for identifying a living body, comprising:

a generating section for generating an electromagnetic wave pulse (the frequency generator 106, electric field and/or magnetic field transmitter 107 generate and transmit electromagnetic waves; column 13, lines 19-51);

a detecting section for detecting the electromagnetic wave pulse, wherein the electromagnetic wave pulse includes superposed biological information (figs 11-14, receiving mechanism 105 including electric field receiver and/or magnetic field receiver 108 and the detecting mechanism 111; column 13, lines 19-51);

an information-collecting section for deriving a time waveform of the electromagnetic wave pulse by sampling the electromagnetic wave pulse detected in the detecting section and extracting the biological information by filtering the time waveform through a frequency property (figs 11-14, a detector detects the electromagnetic wave form comprising biological information; column 13, lines 19-51; the detector further measures the phase change i.e. time

delay, amplitude and/or frequency i.e. time wave form of the electromagnetic waves; column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5 and the detector extracts the biological information using a frequency property; column 14, lines 19-34);

a memory section for preliminarily memorizing biological information (a microprocessor has associated memory for storing reference biological information; column 13, lines 19-51 and column 14, lines 8-18); and

an identifying section for comparing the biological information derived extracted by the information-collecting section with the biological information memorized by the memory section (a microprocessor 103 compares the biological information extracted by the detector with reference signals stored in the memory; column 13, lines 19-51 and column 14, lines 8-18).

Brooks discloses the use of electromagnetic waves (column 4, lines 3-5) for detecting biological information and the biological information extracted from the time waveform is derived form either phase shift, amplitude change and/or frequency change (column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5). Brooks further suggests the use of different frequencies of electromagnetic waves for optimized results depending upon the type of field being used (column 4, lines 21-22; column 9, lines 24-27). Brooks recognizes biometric properties of a subject by detecting electromagnetic waves and processing them to image biometric parameters e.g. finger prints. However, Brooks does not teach that the frequency of electromagnetic waves ranges from 300 GHz to 30 THz i.e. terahertz waves are used and that the biological information is extracted from the time delay caused by change in position of a body over time.

Takahashi, a reference in an analogous art i.e. electromagnetic imaging discloses an imaging system for 2 D analysis of an object wherein the system can detect changes in position of an object in real time by performing a frequency analysis to measure the time delay of the terahertz signals emitted by the object (see: *summary of the invention*). Takahashi further discloses that terahertz waves of frequency 100 GHz – 10 THz and neighboring higher and lower frequencies are used (column 1, lines 20-31).

It would have been obvious to one of ordinary skill in the art to substitute the electromagnetic waves used for extracting biological information as disclosed by Brooks with a higher frequency electromagnetic waves i.e. terahertz waves as taught by Takahashi because terahertz waves provides the ideal trade-off between spatial resolution and Rayleigh scattering thus resulting in a better image quality than microwaves or other higher frequency electromagnetic wave e.g. optical waves.

Regarding rejections on claim 9 see previous office action.

10. A method of identification of a living body, comprising the steps of:

generating an electromagnetic wave pulse (the frequency generator 106; electric field and/or magnetic field transmitter 107 generate and transmit electromagnetic waves column 13, lines 19-51);

detecting an electromagnetic wave generated from the living body, the electromagnetic wave including superposed biological information (figs 11-14, the receiving mechanism 105 and detecting mechanism detects the electromagnetic wave form comprising biological information; column 13, lines 19-51);

deriving a time waveform of the electromagnetic wave by sampling the electromagnetic wave detected in the detecting step (figs 11-14, the detector measures the phase change i.e. time delay, amplitude and/or frequency i.e. time wave form of the electromagnetic waves; column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5);

separating a time waveform regarding the biological information by filtering the time waveform through a frequency property (the time waveform is separated by filtering the time wave from through a frequency property; column 17, lines 34-61 and column 14, lines 19-34); and

comparing the biological information with preliminarily memorized biological information (a microprocessor 103 compares the biological information extracted by the detector with reference signals stored in the memory; column 13, lines 19-51 and column 14, lines 8-18).

Brooks discloses the use of electromagnetic waves (column 4, lines 3-5) for detecting biological information and the biological information extracted from the time waveform is derived form either phase shift, amplitude change and/or frequency change (column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5). Brooks further suggests the use of different frequencies of electromagnetic waves for optimized results depending upon the type of field being used (column 4, lines 21-22; column 9, lines 24-27). Brooks recognizes biometric properties of a subject by detecting electromagnetic waves and processing them to image biometric parameters e.g. finger prints. However, Brooks does not teach that the frequency of electromagnetic waves ranges from 300 GHz to 30 THz i.e. terahertz waves are used and that the biological information is extracted from the time delay caused by change in position of a body over time.

Takahashi, a reference in an analogous art i.e. electromagnetic imaging discloses an imaging system for 2 D analysis of an object wherein the system can detect changes in position of an object in real time by performing a frequency analysis to measure the time delay of the terahertz signals emitted by the object (see: *summary of the invention*). Takahashi further discloses that terahertz waves of frequency 100 GHz – 10 THz and neighboring higher and lower frequencies are used (column 1, lines 20-31).

It would have been obvious to one of ordinary skill in the art to substitute the electromagnetic waves used for extracting biological information as disclosed by Brooks with a higher frequency electromagnetic waves i.e. terahertz waves as taught by Takahashi because terahertz waves provides the ideal trade-off between spatial resolution and Rayleigh scattering thus resulting in a better image quality than microwaves or other higher frequency electromagnetic wave e.g. optical waves.

Regarding rejections on claim 11 see previous office action.

12. A method for deriving a time waveform, comprising the steps of:

detecting an electromagnetic wave generated from the living body, the electromagnetic wave including superposed biological information (figs 11-14, the receiving mechanism 105 and detecting mechanism detect the wave electromagnetic waver form comprising biological information; column 13, lines 19-51);

deriving a time waveform of the electromagnetic wave by sampling the electromagnetic wave detected in the detecting step (figs 11-14, the detector measures the phase change i.e. time

delay, amplitude and/or frequency i.e. time wave form of the electromagnetic waves; column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5).

Brooks discloses the use of electromagnetic waves (column 4, lines 3-5) for detecting biological information and the biological information extracted from the time waveform is derived form either phase shift, amplitude change and/or frequency change (column 13, lines 19-51; column 14, lines 1-49 and 56-67 and column 15, lines 1-5). Brooks further suggests the use of different frequencies of electromagnetic waves for optimized results depending upon the type of field being used (column 4, lines 21-22; column 9, lines 24-27). Brooks recognizes biometric properties of a subject by detecting electromagnetic waves and processing them to image biometric parameters e.g. finger prints. However, Brooks does not teach that the frequency of electromagnetic waves ranges from 300 GHz to 30 THz i.e. terahertz waves are used and that the biological information is extracted from the time delay caused by change in position of a body over time.

Takahashi, a reference in an analogous art i.e. electromagnetic imaging discloses an imaging system for 2 D analysis of an object wherein the system can detect changes in position of an object in real time by performing a frequency analysis to measure the time delay of the terahertz signals emitted by the object (see: *summary of the invention*). Takahashi further discloses that terahertz waves of frequency 100 GHz – 10 THz and neighboring higher and lower frequencies are used (column 1, lines 20-31).

It would have been obvious to one of ordinary skill in the art to substitute the electromagnetic waves used for extracting biological information as disclosed by Brooks with a higher frequency electromagnetic waves i.e. terahertz waves as taught by Takahashi because

terahertz waves provides the ideal trade-off between spatial resolution and Rayleigh scattering thus resulting in a better image quality than microwaves or other higher frequency electromagnetic wave e.g. optical waves.

Regarding rejections on claims 13-15 see previous office action.

Response to Arguments

Applicant's arguments with respect to claims 1, 6, 7, 8, 10 and 12, filed on March 31, 2009 have been considered but are moot in view of the new grounds of rejection. See U.S.C 103(a) rejection of claims 1, 6, 7, 8, 10 and 12 as explained above.

If the Applicant seeks any clarification regarding this office action or to discuss suggestions to overcome the applied prior art the Applicant is invited to request an interview.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ATIA SYED whose telephone number is (571)270-7134. The examiner can normally be reached on Monday through Friday, 9:00-5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Johnson can be reached on (571) 272-4768. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ATIA SYED/
Examiner, Art Unit 3769

/Michael C. Astorino/
Primary Examiner, Art Unit 3769

June 17, 2009